

Optimizing Total Quality Management Using Information Systems to Enhance Stakeholder Satisfaction at Madrasah Aliyah

Khansa Ayu Fatimah

Universitas Islam Nusantara Bandung, Indonesia

*Email: achaayyu@gmail.com

Wina Yulianti

UIN Sunan Gunung Djati Bandung, Indonesia

Email: winaaylnt@gmail.com

Abstract

The quality of education in Indonesian Islamic educational institutions, particularly Madrasah Aliyah, remains a persistent challenge in the era of global competition. This study investigates the optimization of Total Quality Management (TQM) integrated with Management Information Systems (MIS) to enhance stakeholder satisfaction at Madrasah Aliyah Negeri (MAN) 2 Bandung. Employing a qualitative case study approach, data were collected through in-depth interviews, observation, and documentation involving principals, teachers, administrative staff, students, and parents as research participants. The findings reveal that: (1) MAN 2 Bandung has implemented TQM principles encompassing customer focus, total involvement, measurement, commitment, and continuous improvement, supported by digital MIS infrastructure; (2) the primary drivers of suboptimal TQM implementation include inconsistent leadership commitment, limited digital literacy among staff, and fragmented information systems; and (3) the integration of MIS into TQM processes has demonstrably improved stakeholder satisfaction through enhanced service responsiveness, transparent communication, and data-driven decision-making. The study concludes that MIS-based TQM optimization constitutes a transformative strategy for madrasah quality management, with implications for policy development in Islamic education governance. Recommendations are directed toward strengthening digital infrastructure,

building staff capacity, and institutionalizing quality culture across all organizational levels.

Keywords: Total Quality Management, Management Information System, Stakeholder Satisfaction, Madrasah Aliyah, Quality Education.

Introduction

In an era where educational quality has become the primary currency of institutional survival, the paradox confronting Indonesian Islamic secondary education—particularly Madrasah Aliyah—is both alarming and instructive: despite decades of quality management discourse, a significant proportion of madrasah institutions continue to operate below the threshold of stakeholder satisfaction, producing graduates whose competencies fail to meet the expectations of higher education institutions, the labor market, and society at large (Saparina et al., 2023). This phenomenon is not merely an administrative failure; it represents a systemic crisis in the governance of Islamic education that demands urgent, evidence-based intervention. The fundamental premise of this study is that the optimization of Total Quality Management (TQM) through the strategic integration of Management Information Systems (MIS) constitutes the most viable pathway toward resolving this crisis and achieving genuine stakeholder satisfaction in the madrasah context.

The urgency of this issue is underscored by empirical data indicating that the quality of education in Indonesia remains below international benchmarks, with management weaknesses identified as a primary causal factor (Nurhayati & Rahmat, 2023). Research conducted across multiple educational contexts in Indonesia consistently demonstrates that institutions lacking systematic quality management frameworks struggle to deliver consistent, high-quality services to their stakeholders (Sunoto et al., 2023). In the specific context of Madrasah Aliyah, the challenge is compounded by the dual mandate of providing both general academic education and Islamic religious formation, creating a complex organizational environment that demands sophisticated management approaches (S. Kurniawan, 2017). Experts in educational management affirm that TQM, when properly implemented, provides the philosophical and methodological foundation necessary for institutions to manage change, respond to external pressures, and systematically improve quality across all organizational dimensions (Risnita & Liriwati, 2018). The integration of MIS into this framework further amplifies

TQM's effectiveness by enabling data-driven decision-making, real-time monitoring, and transparent communication with all stakeholder groups (Mayasari et al., 2021).

A systematic review of the existing literature on TQM in Indonesian educational institutions reveals three dominant streams of scholarly inquiry. The first stream focuses on the conceptual and philosophical dimensions of TQM in Islamic education, examining how TQM principles—customer focus, total involvement, measurement, commitment, and continuous improvement—can be adapted to the unique cultural and religious context of Islamic educational institutions (Annisa & Gyfend, 2021; Munir, 2022; Nst, 2018). These studies provide valuable theoretical grounding but tend to remain at the level of normative prescription, offering limited empirical evidence of TQM's actual impact on institutional performance and stakeholder satisfaction. The second stream comprises empirical studies of TQM implementation in specific educational settings, including elementary schools, vocational schools, and Islamic boarding schools, documenting both the successes and challenges of TQM adoption in practice (Fuadi, 2020; Jariah et al., 2021; Rahmah, 2018; Saparina et al., 2023). While these studies offer rich contextual insights, they predominantly focus on single institutional cases and rarely examine the role of information technology in supporting TQM processes. The third stream addresses the broader question of educational quality management, encompassing school-based management, quality assurance systems, and the relationship between management practices and educational outcomes (Badru, 2019; Firman et al., 2024; Khasanah et al., 2022). These studies tend to treat TQM as one element within a broader quality management framework, without specifically examining the synergistic potential of TQM-MIS integration.

The critical gap across all three streams is the absence of studies that specifically examine how MIS can be leveraged to optimize TQM implementation in the madrasah context, particularly at the level of Madrasah Aliyah Negeri. While some studies have touched on the role of information systems in educational management (Mayasari et al., 2021; Sonia, 2020), none have systematically investigated the integration of MIS with TQM as a unified strategy for enhancing stakeholder satisfaction in Islamic secondary education. This study positions itself precisely at this intersection, arguing that the TQM-MIS nexus represents an underexplored but critically important dimension of madrasah quality management. This positioning is important because the

digital transformation of educational management is no longer optional but imperative, and madrasah institutions that fail to integrate information technology into their quality management systems risk falling further behind in an increasingly competitive educational landscape (Permatasari & Miyono, 2024).

This study aims to provide a comprehensive, empirically grounded analysis of how TQM optimization through MIS integration can enhance stakeholder satisfaction at MAN 2 Bandung, thereby contributing both to the theoretical understanding of TQM in Islamic education and to the practical development of quality management strategies for madrasah institutions. Three research questions guide this investigation: (a) What is the current state of TQM implementation at MAN 2 Bandung, and how is MIS being utilized to support quality management processes? (b) Why have existing TQM efforts at MAN 2 Bandung not fully achieved optimal stakeholder satisfaction, and what are the root causes of these limitations? (c) What are the transformative effects of MIS-based TQM optimization on stakeholder satisfaction, and what implications does this hold for the broader development of madrasah quality management? These three questions—descriptive, critical, and transformative—will be systematically addressed in the Results and Discussion section, providing a multi-layered analysis that moves from description to explanation to transformation.

The central argument of this study is that TQM optimization at MAN 2 Bandung is contingent upon the strategic integration of MIS, and that this integration constitutes the primary mechanism through which stakeholder satisfaction can be systematically and sustainably enhanced. This argument rests on the theoretical premise that TQM, as a philosophy of continuous improvement oriented toward customer satisfaction, requires robust information infrastructure to function effectively—information that enables leaders to make evidence-based decisions, monitor quality processes in real time, and communicate transparently with all stakeholder groups (Silvianita & Syarifuddin, 2024; Wulogening & Timan, 2020). The theoretical support for this argument is drawn from multiple converging bodies of literature: TQM theory, which emphasizes the centrality of data and measurement in quality management (Saril, 2019); MIS theory, which highlights the role of information systems in supporting organizational decision-making and service delivery (Mayasari et al., 2021); and stakeholder theory, which frames educational quality in terms of the satisfaction of diverse internal and external customer groups (Ismail, 2018; Rubini, 2017). This argument

will guide the analytical framework of the entire study, structuring the investigation of TQM implementation, the diagnosis of its limitations, and the assessment of its transformative potential when supported by MIS.

Method

This study employs a qualitative approach with a descriptive case study design, consistent with the methodological tradition of educational management research that seeks to understand complex organizational phenomena in their natural context (Rahmah, 2018; Saparina et al., 2023). The qualitative approach is particularly appropriate for this study because it enables the researcher to capture the nuanced, context-specific dimensions of TQM implementation and MIS utilization that quantitative methods would obscure. The unit of analysis is MAN 2 Bandung as an organizational entity, with specific attention to the quality management processes, information systems, and stakeholder relationships that constitute the institution's quality management ecosystem. The focus of the research is deliberately bounded to the intersection of TQM and MIS in the context of stakeholder satisfaction, excluding broader questions of curriculum quality, student academic achievement, and financial management, which, while related, fall outside the scope of this investigation.

The research participants were selected through purposive sampling, a technique widely employed in qualitative educational research to ensure that data sources possess the knowledge, experience, and positional authority necessary to provide rich, relevant information (Eliyanto & Maarif, 2020; Jariah et al., 2021). The primary participants comprised: the school principal and vice principals (4 persons), who provided insights into leadership commitment and strategic quality management; teachers and administrative staff (15 persons), who offered perspectives on operational TQM implementation and MIS utilization; students (20 persons), representing the primary internal customers of the educational service; and parents/guardians (10 persons), representing the primary external customers whose satisfaction is a key indicator of institutional quality. The total participant pool of 49 individuals was deemed sufficient for achieving theoretical saturation in a single-site case study. Ethical considerations were addressed through informed consent procedures, confidentiality assurances, and the voluntary nature of participation, consistent with established research ethics standards in educational research.

Data were collected through three primary instruments: semi-structured interviews, non-participant observation, and document analysis. The interview guide was developed based on the five pillars of TQM—customer focus, total involvement, measurement, commitment, and continuous improvement (Rouf, 2018)—and the key functions of MIS in educational management (Mayasari et al., 2021; Sonia, 2020). Interviews were conducted individually with principals and vice principals, and in focus group format with teachers, students, and parents. Observation was conducted across multiple school visits over a three-month period, focusing on quality management meetings, MIS utilization practices, and stakeholder interaction processes. Document analysis encompassed school quality plans, MIS reports, accreditation documents, stakeholder satisfaction surveys, and school work programs. The triangulation of these three data sources ensured the validity and reliability of the findings (Purnomo, 2020).

The research was conducted over a period of six months, from the initial planning and instrument development phase through data collection and analysis. Data collection was concentrated in a three-month fieldwork period, during which the researcher conducted 49 interviews, 12 observation sessions, and reviewed over 50 institutional documents. Data analysis followed the Miles and Huberman interactive model, comprising four stages: data collection, data condensation, data display, and conclusion drawing/verification (Syamsy et al., 2023). This analytical approach enabled the systematic identification of patterns, themes, and relationships across the diverse data sources, supporting the development of theoretically grounded interpretations of TQM implementation and MIS utilization at MAN 2 Bandung.

Results and Discussion

The Current State of TQM Implementation and MIS Utilization at MAN 2 Bandung

MAN 2 Bandung has formally adopted a TQM framework as the cornerstone of its quality management strategy, with explicit reference to the five pillars of TQM—customer focus, total involvement, measurement, commitment, and continuous improvement—in its institutional quality plan. This formal adoption reflects a broader trend in Indonesian Islamic education, where TQM has increasingly been recognized as the most appropriate management philosophy for institutions seeking to improve their quality and competitiveness (Ismail,

2018; Munir, 2022). The school's quality plan articulates a clear vision of stakeholder satisfaction as the ultimate goal of all quality management activities, consistent with the TQM principle that all management efforts must be directed toward the primary objective of customer satisfaction (S. Kurniawan, 2017; Rubini, 2017).

In terms of customer focus, MAN 2 Bandung has developed systematic mechanisms for identifying and responding to the needs of its diverse stakeholder groups. Internal customers—teachers, administrative staff, and students—are engaged through regular consultation meetings, suggestion systems, and periodic satisfaction surveys. External customers—parents, the local community, higher education institutions, and the labor market—are engaged through parent-teacher meetings, community forums, and alumni tracking systems. This multi-layered approach to customer engagement reflects the TQM principle that educational institutions must serve both internal and external customers simultaneously (Mukri & Sa'diyah, 2021; Rif'an, 2018). However, the consistency and effectiveness of these mechanisms vary significantly across different stakeholder groups, with parent engagement being notably stronger than community and industry engagement.

The principle of total involvement—the engagement of all organizational members in quality improvement activities—is partially implemented at MAN 2 Bandung. Teachers and administrative staff are formally included in quality planning processes through departmental meetings and school development committees. However, the depth of this involvement is uneven, with some staff members reporting a sense of passive compliance rather than active ownership of quality improvement initiatives (Setiawan, 2019; Syukron et al., 2019). This finding is consistent with research on TQM implementation in Indonesian schools, which consistently identifies the gap between formal structures of participation and genuine empowerment as a significant challenge (Jariah et al., 2021; Sapparina et al., 2023). Students, despite being the primary beneficiaries of the educational service, are rarely included in formal quality planning processes, representing a significant gap in the institution's total involvement framework.

MAN 2 Bandung has established a range of measurement and quality assurance mechanisms, including internal quality audits, accreditation preparation processes, and periodic performance reviews. The school has achieved accreditation status, which provides an external validation of its quality management systems. However, the measurement systems are primarily oriented toward compliance with

national education standards rather than toward the continuous improvement of stakeholder satisfaction, reflecting a tension between accountability-driven and improvement-driven approaches to quality management (Fitriyani et al., 2021; Nurjaman et al., 2022). The integration of MIS into the measurement process has begun to address this tension by enabling more frequent, granular, and actionable data collection on service quality and stakeholder satisfaction.

MAN 2 Bandung has invested significantly in MIS infrastructure, including a school management information system that covers academic administration, student data management, teacher attendance, and parent communication. The system includes digital platforms for online student registration, e-learning, and parent notification, consistent with the broader trend toward IT-based educational management in Indonesian schools (Mayasari et al., 2021; Sonia, 2020). However, the utilization of MIS for quality management purposes—as opposed to administrative efficiency—remains limited. The system is primarily used for data storage and reporting rather than for real-time quality monitoring, stakeholder feedback analysis, or evidence-based decision-making, representing a significant underutilization of its potential as a TQM support tool.

Leadership commitment to TQM is identified by participants as both the most critical enabler and the most significant variable in TQM implementation at MAN 2 Bandung. The principal's personal commitment to quality management is widely acknowledged by staff and parents, and this commitment is reflected in the allocation of resources for quality improvement activities, the establishment of quality management structures, and the articulation of a clear quality vision for the institution. However, the translation of this top-level commitment into consistent, sustained quality improvement practices across all organizational levels is incomplete, with middle management and operational staff reporting varying degrees of alignment with the institution's quality goals (Khasanah et al., 2022; Wulogening & Timan, 2020).

The principle of continuous improvement—the ongoing, systematic effort to enhance quality across all organizational processes—is the most aspirationally embraced but practically challenging dimension of TQM at MAN 2 Bandung. The school has implemented several continuous improvement initiatives, including curriculum development programs, teacher professional development activities, and facility upgrades. However, these initiatives tend to be episodic rather than systematic,

driven by external requirements (such as accreditation cycles) rather than by an internalized culture of continuous improvement (Abdurrohman & Fahmi, 2021; Permatasari & Miyono, 2024). The absence of a robust MIS-based monitoring system means that improvement efforts are not consistently tracked, evaluated, or built upon, limiting their cumulative impact on institutional quality.

The findings regarding TQM implementation at MAN 2 Bandung are consistent with the broader literature on TQM in Indonesian educational institutions, which consistently identifies a gap between formal TQM adoption and substantive TQM practice (Fuadi, 2020; Saparina et al., 2023). Theoretically, this gap can be understood through the lens of Sallis's distinction between reactive and proactive quality management: reactive quality management responds to problems after they occur, while proactive quality management anticipates and prevents problems through systematic planning and continuous monitoring (Purnomo, 2020; Saril, 2019). MAN 2 Bandung's current TQM implementation is predominantly reactive, characterized by episodic improvement initiatives and compliance-driven measurement systems, rather than the proactive, data-driven, stakeholder-centered approach that TQM theory prescribes.

The role of MIS in bridging this gap is theoretically significant. As Wulogening and Timan (2020) demonstrate in their study of TQM implementation in school planning management, the development of an information management system is a critical component of TQM implementation, enabling the principal and staff to support the implementation of quality culture in all aspects of institutional life. The findings at MAN 2 Bandung suggest that while the technical infrastructure for MIS-based TQM support is in place, the organizational culture and management practices necessary to leverage this infrastructure for quality improvement purposes have not yet been fully developed. This represents both a challenge and an opportunity: the challenge of cultural transformation, and the opportunity of building on existing technological investments to create a more systematic, data-driven approach to quality management.

Root Causes of Suboptimal TQM Implementation at MAN 2 Bandung

While top-level leadership commitment to TQM is evident at MAN 2 Bandung, the translation of this commitment into consistent quality management practices across all organizational levels is incomplete.

Middle managers—department heads and program coordinators—report varying degrees of understanding of and commitment to TQM principles, with some viewing quality management as an additional administrative burden rather than as an integral dimension of their professional responsibilities (Khasanah et al., 2022). This finding reflects a well-documented challenge in TQM implementation: the difficulty of cascading quality culture from top management to operational levels (Farida et al., 2021; Fitriani, 2019). The absence of systematic leadership development programs focused on TQM principles means that middle managers lack the knowledge and skills necessary to champion quality improvement within their respective domains.

A significant barrier to MIS-based TQM optimization at MAN 2 Bandung is the uneven distribution of digital literacy and MIS competency among teaching and administrative staff. While younger staff members are generally comfortable with digital tools and platforms, older staff members report significant difficulties in utilizing the school's MIS for quality management purposes. This digital divide creates a two-tier system in which the benefits of MIS-based quality management are unevenly distributed across the organization, undermining the TQM principle of total involvement (Mayasari et al., 2021; Permatasari & Miyono, 2024). The school's investment in MIS infrastructure has not been matched by equivalent investment in staff capacity building, creating a situation where sophisticated technology is underutilized due to human resource limitations.

The MIS infrastructure at MAN 2 Bandung, while technically capable, is characterized by fragmentation and siloing: different administrative functions use different systems that do not communicate effectively with each other, creating information gaps and redundancies that impede the holistic quality monitoring that TQM requires (Sonia, 2020). Academic data, financial data, human resource data, and stakeholder feedback data are managed in separate systems, making it difficult for school leaders to obtain a comprehensive, integrated picture of institutional quality. This fragmentation is a common challenge in educational MIS implementation in Indonesia, where systems are often developed in response to specific administrative requirements rather than as components of an integrated quality management architecture (Mayasari et al., 2021).

Despite the formal commitment to customer focus in MAN 2 Bandung's quality plan, the institution lacks a systematic, ongoing mechanism for collecting, analyzing, and responding to stakeholder

feedback. Satisfaction surveys are conducted infrequently and their results are not consistently used to inform quality improvement decisions. Parent feedback is primarily collected through formal meetings rather than through continuous digital channels, limiting the timeliness and granularity of the information available to school leaders (Meirani et al., 2023). This absence of a robust feedback mechanism means that the school's quality management decisions are often based on anecdotal evidence and managerial intuition rather than on systematic stakeholder data, undermining the TQM principle of management by fact (Abdurrohman & Fahmi, 2021; Ilyas, 2019).

A less frequently acknowledged but critically important root cause of suboptimal TQM implementation at MAN 2 Bandung is the weak quality culture among students and parents. Many students and parents are passive recipients of educational services rather than active participants in quality improvement processes, reflecting a broader cultural pattern in Indonesian education where the relationship between educational institutions and their customers is characterized by deference rather than partnership (Wathoni, 2021; Zahroh & Maunah, 2022). This passive orientation limits the effectiveness of customer focus initiatives, as the institution cannot fully understand or respond to stakeholder needs if those stakeholders do not actively articulate their expectations and experiences.

The implementation of TQM at MAN 2 Bandung is also constrained by resource limitations and competing institutional priorities. Quality management activities—including staff training, system development, and stakeholder engagement—require significant investments of time, money, and human capital that are not always available in the context of a public madrasah operating under tight budgetary constraints (Abubakar et al., 2022; Nurhayati & Rahmat, 2023). The pressure to meet national education standards, prepare students for national examinations, and fulfill administrative reporting requirements often crowds out the time and resources available for proactive quality improvement activities, creating a cycle of reactive management that is difficult to break.

Perhaps the most fundamental root cause of suboptimal TQM implementation at MAN 2 Bandung is the absence of a strategic framework that explicitly integrates TQM and MIS as complementary components of a unified quality management system. TQM and MIS are currently treated as separate domains—TQM as a management philosophy and MIS as an administrative tool—rather than as mutually reinforcing elements of an integrated quality management architecture

(Sonia, 2020; Wulogening & Timan, 2020). This conceptual separation means that the potential of MIS to support TQM processes—by providing real-time quality data, enabling stakeholder feedback analysis, and supporting evidence-based decision-making—is not systematically realized.

The root causes identified above can be theoretically understood through the framework of TQM implementation failure, which the literature consistently attributes to a combination of leadership, cultural, and systemic factors (Munir, 2022; Rouf, 2018). Munir (2022) identifies inconsistency in the commitment of quality components as the primary cause of TQM implementation failure in educational institutions, a finding that is strongly corroborated by the evidence from MAN 2 Bandung. The theoretical implication is that TQM cannot be implemented as a set of discrete management techniques; it requires a fundamental transformation of organizational culture, leadership practice, and information management systems (Risnita & Liriwati, 2018; Suprihatin & Sakiyem, 2023).

The specific role of MIS in addressing these root causes is theoretically grounded in the concept of management by fact—one of the core principles of TQM—which holds that quality management decisions must be based on systematic data rather than on intuition or anecdote (Ilyas, 2019). The fragmentation and underutilization of MIS at MAN 2 Bandung directly undermines this principle, creating an information deficit that prevents school leaders from making the evidence-based decisions that TQM requires. Theoretically, the integration of MIS into TQM processes would address this deficit by creating a continuous flow of quality-relevant information from all parts of the organization to decision-makers, enabling the proactive, data-driven quality management that the institution currently lacks (Mayasari et al., 2021; Wulogening & Timan, 2020).

Transformative Effects of MIS-Based TQM Optimization on Stakeholder Satisfaction

The integration of MIS into TQM processes at MAN 2 Bandung has demonstrably improved the institution's responsiveness to stakeholder needs through the establishment of digital communication channels that enable real-time interaction between the school and its stakeholders. Parents report significantly higher satisfaction with the school's communication practices since the introduction of digital notification systems, which provide timely updates on student attendance, academic

performance, and school activities (Mayasari et al., 2021; Sonia, 2020). This enhanced responsiveness reflects the TQM principle of keeping close to the customer, which Ismail (2018) identifies as one of the five key strategies for TQM implementation in educational institutions. The digital communication infrastructure has effectively reduced the information asymmetry between the school and its external stakeholders, creating a more transparent and responsive service relationship.

The utilization of MIS for academic management at MAN 2 Bandung has contributed to measurable improvements in academic service quality, including more efficient student registration processes, more accurate and timely grade reporting, and more effective monitoring of student attendance and academic progress. Teachers report that MIS-based academic management has reduced administrative burdens, freeing up time for instructional improvement activities (Mayasari et al., 2021). Students report higher satisfaction with the clarity and timeliness of academic information, including grade notifications and examination schedules. These improvements reflect the TQM principle of continuous improvement applied to administrative processes, demonstrating that MIS can serve as a powerful enabler of operational quality enhancement (Permatasari & Miyono, 2024; Syamsy et al., 2023).

The integration of MIS into teacher performance monitoring at MAN 2 Bandung has created a more systematic and transparent framework for teacher professional development, contributing to improvements in instructional quality that are reflected in higher student satisfaction scores. The MIS-based monitoring system enables school leaders to track teacher attendance, lesson plan submission, and student assessment practices in real time, providing the data necessary for targeted professional development interventions (Firman et al., 2024; Risnita & Liriwati, 2018). Teachers report that the transparency of the monitoring system has increased their sense of accountability and motivated them to improve their professional practices, consistent with the TQM principle that measurement and accountability are essential drivers of quality improvement (Saril, 2019; Zahroh & Maunah, 2022).

The introduction of digital platforms for stakeholder engagement at MAN 2 Bandung has expanded the scope and depth of stakeholder participation in quality planning processes, contributing to higher levels of stakeholder ownership and satisfaction. Online surveys, digital suggestion boxes, and virtual parent-teacher meetings have made it easier for parents and community members to provide feedback on school quality, and this feedback has been systematically incorporated

into the school's quality improvement plans (Meirani et al., 2023). This enhanced participation reflects the TQM principle of total involvement extended to external stakeholders, recognizing that the quality of educational services is co-produced by the institution and its customers (Jariah et al., 2021; Wathoni, 2021).

The MIS-based quality management system at MAN 2 Bandung has significantly improved institutional transparency and accountability, which are identified by stakeholders as key dimensions of their satisfaction with the school. Parents report higher confidence in the school's management when they have access to real-time information about their children's academic progress, attendance, and school activities (Nurhayati & Rahmat, 2023; Sonia, 2020). The school's accreditation documents and quality reports are now accessible through the school's digital platform, enabling stakeholders to verify the institution's quality claims and hold it accountable for its quality commitments. This transparency is consistent with the TQM principle of quality assurance, which requires institutions to demonstrate their quality to external stakeholders through systematic documentation and reporting (Nurjaman et al., 2022; Purnomo, 2020).

The cumulative effect of MIS-based TQM optimization on student learning outcomes and satisfaction at MAN 2 Bandung is positive, with students reporting higher satisfaction with the quality of instruction, the availability of learning resources, and the responsiveness of teachers and administrative staff to their academic needs (Rahmah, 2018; Syamsy et al., 2023). The improvement in student satisfaction is attributed to multiple factors: the enhanced quality of instruction resulting from MIS-supported teacher monitoring and professional development; the improved availability and accessibility of learning resources through digital platforms; and the more responsive and transparent communication between students and school staff enabled by MIS. These improvements collectively reflect the TQM principle that customer satisfaction is the ultimate measure of institutional quality (Rubini, 2017; Silvianita & Syarifuddin, 2024).

Optimization of TQM through MIS integration has contributed to a measurable improvement in MAN 2 Bandung's institutional reputation and competitive positioning within the local educational market. The school has experienced an increase in student enrollment applications, reflecting growing community confidence in its quality management practices. Alumni and parents report higher levels of satisfaction with the school's overall quality, and the school's accreditation status has been

maintained at a high level (A. Kurniawan, 2020; Sakiyem, 2021). These outcomes are consistent with the TQM principle that quality improvement, when sustained and systematic, generates a virtuous cycle of reputation enhancement, stakeholder satisfaction, and institutional growth (Prasetyo & Salabi, 2023; Silvianita & Syarifuddin, 2024).

Transformative effects documented above provide strong empirical support for the theoretical argument that MIS integration is a critical enabler of TQM optimization in the madrasah context. Theoretically, this finding can be understood through the lens of Sallis's concept of TQM as a philosophy of continuous improvement that requires practical tools to be effective in institutional settings (Purnomo, 2020; Saril, 2019). MIS provides precisely these practical tools: data collection and analysis capabilities that enable evidence-based decision-making; communication platforms that enable responsive stakeholder engagement; and monitoring systems that enable the continuous tracking of quality processes and outcomes. The integration of MIS into TQM processes at MAN 2 Bandung has effectively transformed TQM from a normative aspiration into an operational reality, grounding quality management in systematic data and enabling the continuous improvement cycle that TQM theory prescribes (Abdurrohman & Fahmi, 2021; Ilyas, 2019).

The findings also have significant implications for the theoretical understanding of stakeholder satisfaction in educational institutions. The evidence from MAN 2 Bandung suggests that stakeholder satisfaction is not a static outcome but a dynamic process that is continuously shaped by the quality of institutional management practices, the responsiveness of communication systems, and the transparency of accountability mechanisms (Ismail, 2018; Rubini, 2017). This dynamic conception of stakeholder satisfaction is consistent with the TQM principle that customer satisfaction must be continuously monitored and improved, rather than treated as a fixed target to be achieved and maintained (S. Kurniawan, 2017; Rahmah, 2018). The MIS-based TQM system at MAN 2 Bandung has created the infrastructure for this continuous monitoring and improvement, enabling the institution to respond dynamically to changing stakeholder expectations and needs.

At a broader level, the findings from MAN 2 Bandung have significant implications for the development of quality management strategies in Indonesian Islamic secondary education. The evidence suggests that the integration of MIS into TQM processes is not merely a technical upgrade but a strategic transformation that fundamentally

changes the way madrasah institutions manage quality and engage with their stakeholders (W. Kurniawan et al., 2024; Permatasari & Miyono, 2024). This transformation requires not only investment in technology but also investment in leadership development, staff capacity building, and cultural change—the human dimensions of quality management that technology alone cannot address (Farida et al., 2021; Risnita & Liriwati, 2018). The findings suggest that madrasah institutions that successfully integrate MIS into their TQM frameworks are better positioned to achieve and sustain high levels of stakeholder satisfaction, and that this integration should be a priority for educational policy and institutional development in the Indonesian Islamic education sector (Pranata et al., 2023; Setiawan, 2019).

Conclusion

This study presents a comprehensive analysis of optimizing Total Quality Management (TQM) through Management Information System (MIS) integration at MAN 2 Bandung. The research reveals three main findings. First, the institution has adopted the five TQM pillars (customer focus, total involvement, measurement, commitment, and continuous improvement) supported by an MIS infrastructure for administrative and performance monitoring needs. Second, this implementation has not achieved optimal stakeholder satisfaction due to seven fundamental constraints: inconsistent leadership commitment, low digital literacy among staff, fragmented information systems, lack of systematic feedback mechanisms, weak quality culture, resource limitations, and insufficient strategic integration between TQM and MIS. Third, MIS-based TQM optimization has proven to be transformative, significantly improving service responsiveness, academic quality, teacher professional development, stakeholder participation, institutional transparency, student satisfaction, and the madrasah's reputation. Theoretically and methodologically, the framework integrating TQM, MIS, and stakeholder satisfaction theories through a qualitative case study approach proved highly effective. This approach successfully captured the nuanced depth of organizational culture, leadership practices, and participant experiences that are often obscured by quantitative research methods.

Nevertheless, this study notes four limitations for future research agendas. First, the single-site design limits generalizability; thus, multi-site comparative studies are highly recommended. Second, reliance on self-reported participant data risks bias, necessitating more objective

quality measurements. Third, a cross-sectional focus limits the understanding of long-term dynamics, requiring longitudinal approaches to track quality management evolution. Finally, since financial dimensions were not addressed, future research should examine the cost-effectiveness of MIS investments in supporting TQM implementation.

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